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Many investigations have been made on the so-called influence of various environmental factors on the production of pigments by fungi, but a survey of the facts seems to indicate that between the absorption of an elementary nutrient and the production of a complex pigment two processes intervene to permit of the establishment of a direct relation between stages at the extreme ends of the series. A much better knowledge than is at hand at present of the nature and structure of fungous pigments is necessary before their physiological status can be determined. Different colors may often be due to the modification of the same pigment, depending on different reactions of the medium.—H. HASSELBRING.

Origin and goal of geobotany.—RÜBEL⁸ has issued a compact and useful paper, dealing with the main phases of the development of geobotany and with the aims of its various subdivisions. Geobotany he regards as embracing all interrelations between plants and the earth, including much of ecology, chorology, chronology, and genetics; thus it includes all of phytogeography in the widest sense, and more. The historical presentation deals especially with the work of THEOPHRASTUS, TOURNEFORT, LINNAEUS, HALLER, SOULAVIE, WILLDENOW, HUMBOLDT, WAHLENBERG, and SCHOUW. Geobotany may be either floristic or vegetational, each of which subdivisions may consider the problems of space (distribution), habitat (ecology), or change (genetics). Thus RÜBEL recognizes 6 fields of geobotany: autochorology, or floristics; synchorology, or the distribution of plant associations; autecology, or the relation between the individual and the habitat; synecology, or the relation between the plant association and the habitat; autogenetics, or the change of floras; and syngenetics, or the change of plant associations. It appears to the reviewer that this is the most logical classification of these fields of study with which he is familiar. As a matter of practice, however, it is unlikely that investigators will increasingly recognize such subdivisions. A treatise dealing only with synchorology was fairly satisfactory in times gone by, but in these days it would seem sterile, except as livened up with ecology and genetics.—H. C. COWLES.

Continuous variation.—STOUT and BOAS,⁹ as the result of their extensive statistical studies of variation in *Cichorium*, recommend that critical study of species variation should be based upon intensive studies of partial (existing among the parts of a single individual) and individual (characteristics of plants as wholes based on their entire record) variabilities. They suggest that failure to appreciate this necessity has allowed considerable error to creep into the work of a number of investigators. For example, hereditary studies of such

⁸ RÜBEL, EDUARD, Anfänge und Ziele der Geobotanik. Vierteljahrsschrift der naturforschenden Gesellschaft in Zürich 62:629-650. 1917.

⁹ STOUT, A. B., and BOAS, HELENE M., Statistical studies of flower number per head in *Cichorium Intybus*: kinds of variability, heredity, and effects of selection. Mem. Torr. Bot. Club 17:334-458. pls. 10-13. 1918.

characters as the size of flowers should be prefaced by an accurate knowledge of how such characters vary with relative place position on the plant or relative time position in the total period of bloom.

The authors have been able to isolate and maintain a number of races, but further state that "within each race there are further variations, continuous in gradation and of the same nature as those appearing in a more mixed population, which are unmistakable evidences of the instability of characters and hereditary units."—MERLE C. COULTER.

New-place effect.—COLLINS¹⁰ has performed a rather unusual experiment with maize, testing the immediate effect of transferring various races to new habitats. We have abundant testimony that it is unwise to go very far from home for seed corn, and have generally concluded that local corn has become the best adapted to local conditions as the result mainly of artificial selection, whether conscious or unconscious. In accordance with this we should naturally suppose that to transfer seed would depress its yield (for a few generations at least). COLLINS, however, shows that while Texas seed of a given strain, planted side by side in Maryland with Maryland seed of the same strain, exceeds the latter in yield by 8 per cent; when the two are grown in Texas the Texas seed exceeds in yield the Maryland seed by only 2 per cent. It seems that the transfer of Maryland seed has acted as a stimulus to relatively greater yield. This phenomenon is termed "new-place" effect. It adds a further complication to the already perplexing problem of vigor in maize.—MERLE C. COULTER.

Dominance and parasitism.—JONES¹¹ finds support of his theory¹² that dominance accounts for hybrid vigor, from observations on susceptibility to parasitism in maize. It has hitherto been demonstrated by several investigators that resistance to parasitism behaves as a definite heritable factor. JONES shows that inbreeding corn serves to isolate certain homozygous races which are susceptible to smut and leaf blight while the more heterozygous ancestors are resistant. He concludes that "as in so many other cases, those factors which enable an organism to attain the best development tend to dominate." Thus, in general, the most heterozygous corn, which therefore shows the greatest hybrid vigor, will be the most resistant. A difficulty arises here, since certain diseases are known to thrive best in the most vigorous plants. It might be possible to account for this difference on the ground that certain diseases are immediately destructive to the host while others are not; although if this were true, JONES's leaf blight disease and smut should behave differently.—MERLE C. COULTER.

¹⁰ COLLINS, G. N., New-place effect in maize. *Jour. Agric. Research* 12:231-243. 1918.

¹¹ JONES, DONALD F., Segregation of susceptibility to parasitism in maize. *Amer. Jour. Bot.* 5:295-300. 1918.

¹² *Rev. Bot. Gaz.* 66:70. 1918.